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PERSPECTIVE 89

Perspective, the annual market research publication from International Business Forms Industries Inc. (IBFI), addresses the most important issues facing forms manufacturers and suppliers to the industry, identifying and monitoring industry trends to a degree unmatched by any other publication serving the forms industry. Based on the IBFI database of information extending back over 20 years, Perspective is prepared at the direction of the IBFI Financial Management & Economic Research Committee. Perspective provides a comprehensive five-year forecast and reviews the previous year's performance.

The authors are responsible for all of the estimates and opinions in this volume. All charts and graphs are the work of the authors. Every effort has been made to ensure accuracy, but, of course, it cannot be guaranteed.

Douglas C. Taylor, Vice President, Programs & Services
Jena L. Crisler, Economic & Market Research Associate

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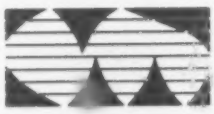

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EXECUTIVE SUMMARY

In 1989, the U.S. forms industry will achieve real growth of 3.1 percent, compared to the 4.1 percent in 1988 and the 2.5 percent growth projected for the overall economy in 1989. Leading growth segments within the industry continue to be custom and stock continuous, but cutsheet products are making bigger gains than ever.

High speed non-impact printers such as the Xerox 9700 introduced in the mid 70s and the IBM 3827 introduced in 1988 have created a tremendous market for cutsheet products among big end-users who generate millions of forms each year, but the introduction of the Xerox 4050 and 4090 and the IBM 3825 laser copier printers are creating a market for short run and very short run cutsheet products also. As non-impact cutsheet technology moves "down market," meaning less expensive, lower speeds and more applications, more end-users will be able to convert existing pre-printed forms to cutsheet forms produced in-house. This trend is pushing many forms manufacturers into the higher value-added market of special construction forms such as self-mailers and label-form combinations.

Channels of distribution are another source of change in the forms industry. At a time when many manufacturers are targeting their production focus, distributors are broadening their product lines. Faced with distributors who may not know how to sell high-priced, value-added products such as direct mail pieces, manufacturers are developing innovative selling arrangements, including training programs and partnering—special agreements between distributors and manufacturers.

The forms marketplace also is evolving because many trade restrictions are being lifted. On January 1, 1989, the United States-Canada Free Trade Agreement took effect. This historic document created the largest free trading zone in the world. Under its provisions, U.S. and Canadian tariffs on business forms will be eliminated over a five-year period in yearly reductions of 20 percent. Its implications for the business forms industry are profound, comparable to the creation of the One Market Concept in 1992 by the European Economic Community (EEC). The effects of the United States-Canada Free Trade Agreement already are being felt in North America, specifically in the acquisitions made by Southam-Paragon Graphics, Montreal, Canada, and the takeover of Uarco Inc. in Barrington, Illinois, and R.L. Crain Inc. of Ottawa, Canada, by Settsu Inc. of Japan.

Forms manufacturers have felt the squeeze of rising raw materials costs on profits, experiencing six separate price increases for paper since January 1987. But in 1989, forms bond prices stabilized and by mid-year fell. This shift in the forms bond market is the result of added uncoated freesheet capacity in North America; increased imports, a consequence of a strong dollar; and a softening in forms demand.

As for the economy, key economic indicators through mid-1989 are presenting a confusing picture. Interest rates have declined slightly from earlier in the year but are still high enough to attract foreign capital in a world which is experiencing quite a few political shake-ups, thus supporting the strength of the U.S. dollar. The American consumer has reduced his percentage of debt and dramatically increased his savings rate over the previous year. Consumer confidence in the economy in June 1989 was slightly above the confidence level for June 1988, according to the Conference Board, a New York City economic and marketing research firm. While a slowdown in economic activity is obviously underway, no clear signs that a recession is looming are apparent.

Table 1 forecasts business forms demand through 1993.

Table 1
U.S. Business Forms Sales
1988-1993*

	1988	1989	1990	1991	1992	1993
Custom Continuous	3363	3462	3542	3630	3732	3814
Stock Continuous	1787	1855	1916	1991	2083	2148
Unit Sets	1677	1704	1721	1742	1771	1794
Salesbooks, Pegboard	372	401	427	441	473	496
Total	7199	7422	7606	7811	8059	8252

* In millions of 1988 dollars at shipment values.

Source: IBFI

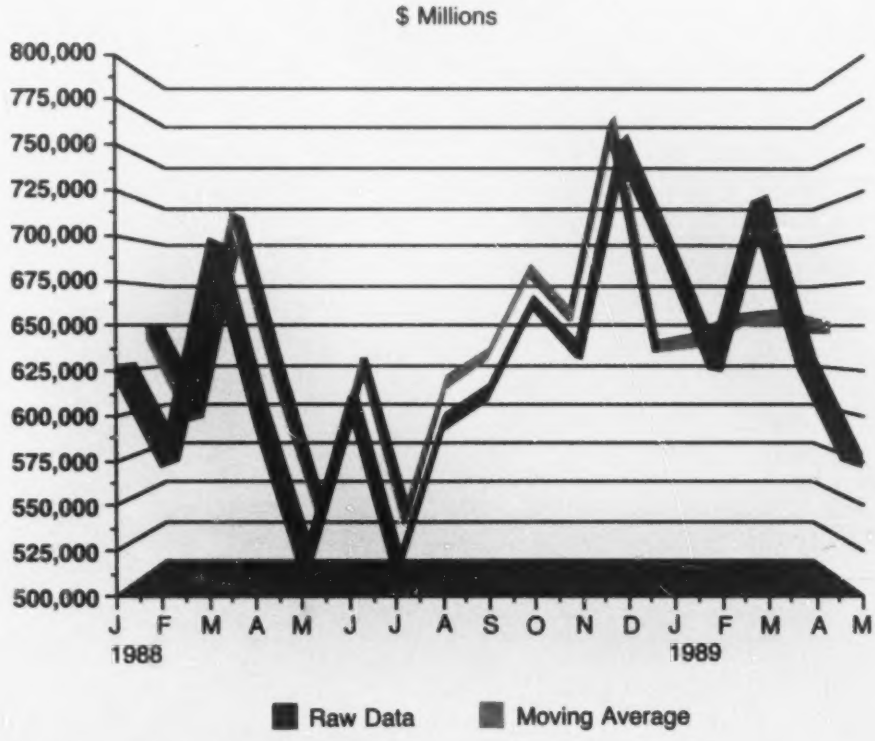
FORMS INDUSTRY PERFORMANCE REVIEW

The traditional U.S. business forms industry, which includes custom continuous, stock continuous, unit sets, salesbooks and pegboard accounting systems, achieved a real growth of 4.1 percent in 1988. Compared to the growth of the entire U.S. economy, 3.8 percent, the business forms industry is doing better than average. But compared to its 1987 growth rate, 4.8 percent, the forms industry is following the overall economic trend towards slower growth.

Based upon IBFI member surveys, Figure 1 traces the monthly retail sales of traditional business forms products from January 1988 through May 1989. The basic sales cycle of 1988 follows the pattern established in 1987 and the first quarter of 1989 appears to be following suit.

Among the product categories themselves, growth rates in 1988 varied considerably. For the first time, stock continuous outperformed custom continuous, achieving a 5.1 percent increase in its rate of growth. Custom continuous, which commands approximately 46 percent of total industry sales, grew 3.9 percent, reflecting the conversion of continuous forms to cutsheet applications in the marketplace. See Figure 2. Unit sets grew by 2.7 percent, slightly declining from a 2.8 percent growth rate in 1987. The market for salesbooks and pegboard systems continues to

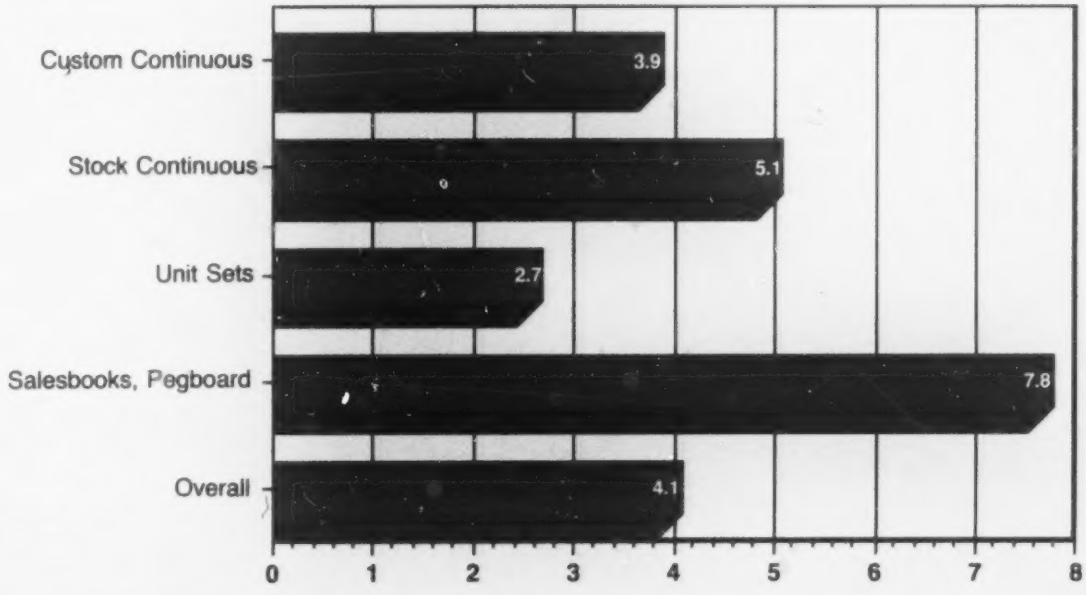
Figure 1
Monthly U.S. Retail Sales



Source: IBFI Monthly Sales Index

Figure 2
1988 Industry Growth by Product Line

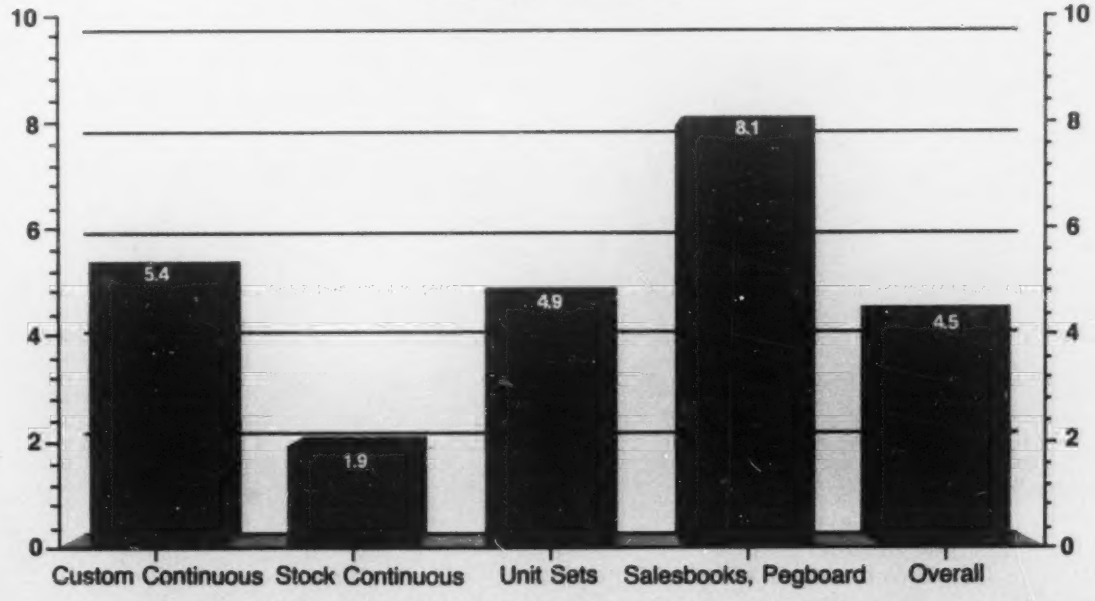
Percent Change Over Prior Year



Source: IBFI Monthly Sales Index; Annual Reports

Figure 3
Business Forms Price Indices*

Percent Change Over Prior Year
(June 1988 - June 1989)



Source: Bureau of Labor Statistics

* Percentage increase in SIC 2761 Producer Price Indices

consolidate while showing a substantial growth rate of 7.8 percent, up from 6.8 percent in 1987. Growth in this latter segment is attributable to pegboard systems, not salesbooks which is a flat or declining market.

The percent change in the business forms producer price indices as reported by the U.S. Bureau of Labor Statistics demonstrates that most of the major product categories increased in price above the rate of inflation. See Figure 3.

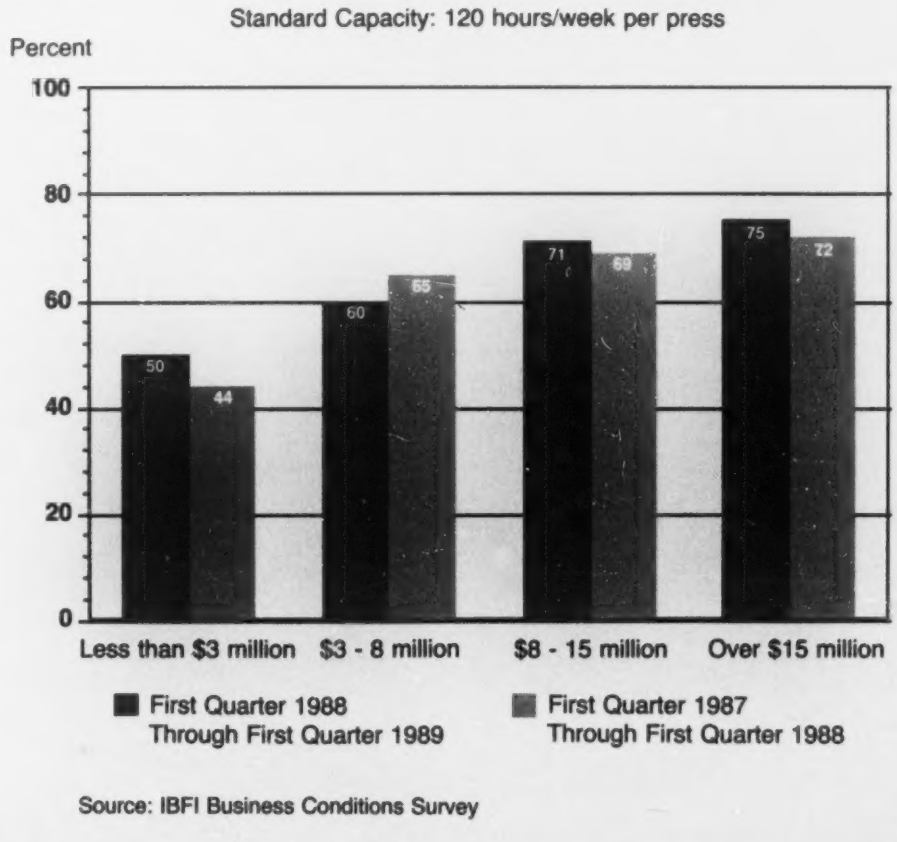
Smaller firms, those under $3 million, were keeping their presses busier in 1988 than in 1987, reporting a 6 percent increase in capacity utilization to 50 percent, up from 44 percent a year earlier. Forms companies in the $8-15 million and the $15 million and over categories also reported increases in capacity utilization, 2 percent and 3 percent respectively, over last year. The only category reporting a decrease in capacity utilization was medium-size companies, $3-8 million in sales, dropping from 65 percent in 1987 to 60 percent in 1988. See Figure 4.

Capacity utilization by product line in 1988 for custom continuous, unit sets and mixed products differed little from that of 1987. IBFI does not have sufficient data to make a comparison for stock continuous capacity utilization for 1988. However, in 1987, the figure was 64 percent. Refer to Figure 5.

The most remarkable change in gross profits per press hour occurred for small companies under $3 million, which reported a 30 percent increase, from $35 to $46 as reported in Figure 6.

Analyzing gross profit per press hour by primary product, as reported by participants in the IBFI Business Conditions Survey, custom continuous remained stable and unit sets gained in profitability as did companies with mixed products. See Figure 7.

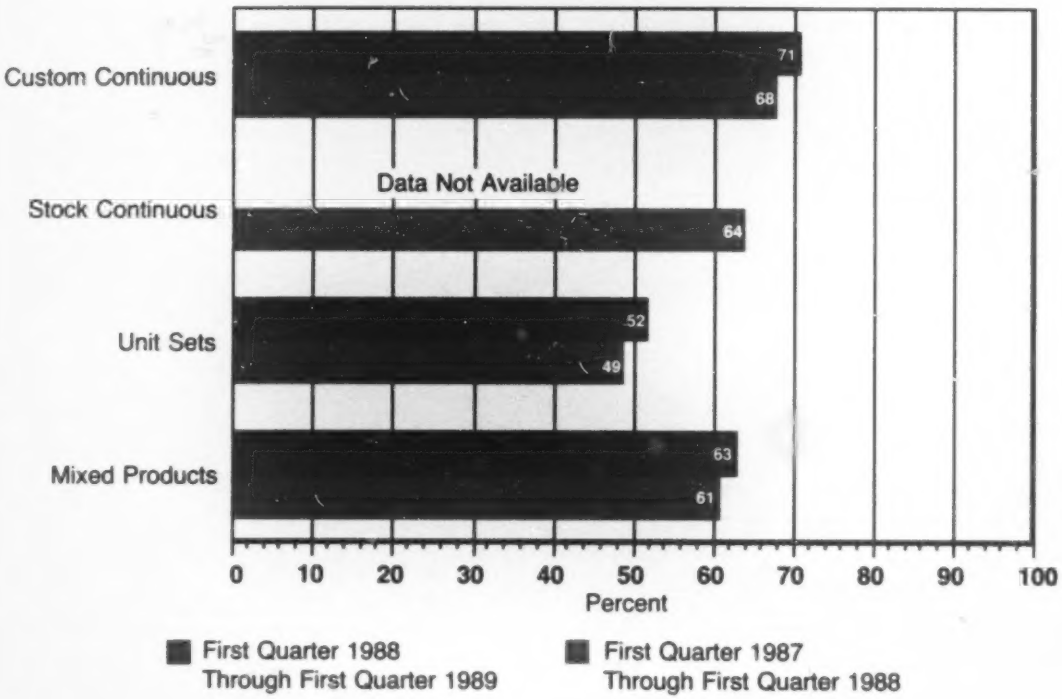
Figure 4
Median Capacity Utilization by Company Size



Source: IBFI Business Conditions Survey

Figure 5
Median Capacity Utilization by Primary Product*

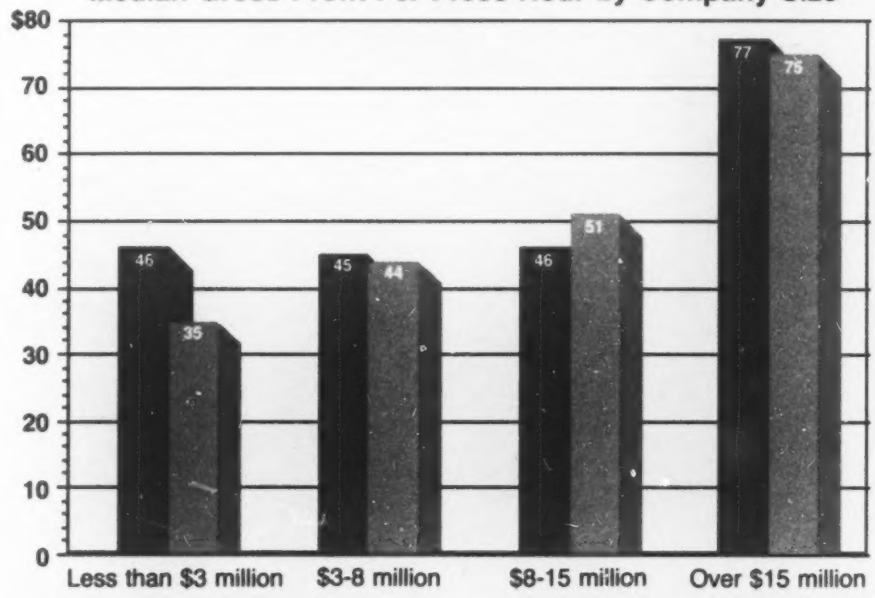
Standard Capacity Utilization: 120 hours/week per press



* This figure provides median capacity utilization for firms whose primary product, 60 percent or more of sales, is either Custom Continuous, Stock Continuous or Unit Sets. Firms with less than 60 percent of sales in each of these product lines are in the mixed product category.

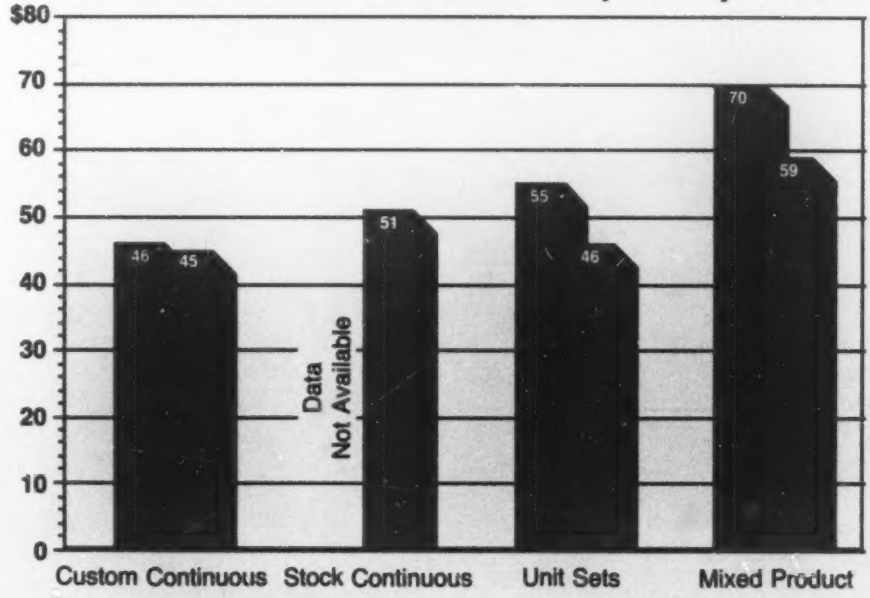
Source: IBFI Business Conditions Survey

Figure 6
Median Gross Profit Per Press Hour by Company Size



Source: IBFI Business Conditions Survey

Figure 7
Median Gross Profit Per Press Hour by Primary Product



Source: IBFI Business Conditions Survey

U.S. ECONOMIC OUTLOOK

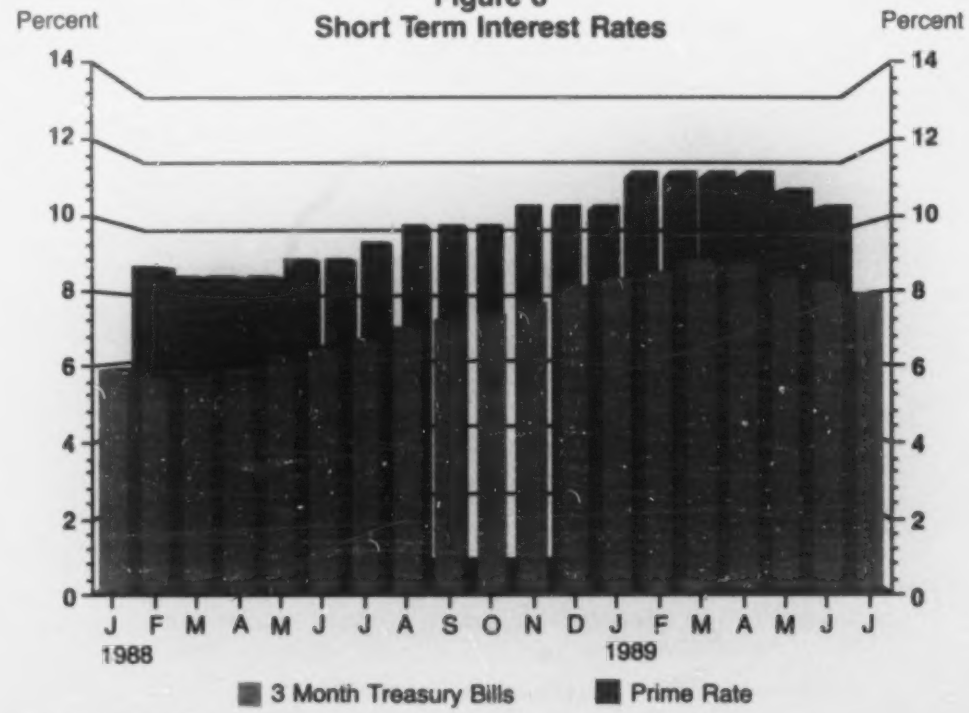
The current economic expansion, now in its seventh year, is the longest peacetime expansion since World War II. Since November 1982, the economy has grown slowly, so slowly as to repeatedly raise alarm over slipping into a recession. And, though many economists predict a recession in the latter half of 1989 and 1990, a replay of the severe recessions of the mid-seventies and early eighties would take a bone-rattling shock the size of the oil embargos of 1973 and 1979.

Meanwhile, this slow growth has progressed without an inflationary boom. But as inflationary pressures mounted earlier this year, fueled by recent jumps in oil prices, the Federal Reserve continued its policy of tight money which it started last year. Aiming to hold the annual real GNP growth rate to 2.5 percent in 1989, the Fed has caused interest rates to increase roughly 3 percentage points in the last twelve months. From March 1988 to July 1989, the prime rate rose from 8.5 to between 10.5 and 11.0 percent.

Short term interest rates peaked in March 1989 as a result of the Federal Reserve's decision to tighten the money supply. See Figure 8. But as fears that the economy was heading for a recession mounted, the Fed eased off on the money supply in the spring of 1989. Interest rates then began to decline for the first time since the first quarter of 1988. This fueled a sharp rise in the equity markets: the Dow Jones Industrial Average (DJIA) moved off the plateau at the 2200 mark and cracked 2600 by July.

As the economy entered the second half of 1989, the Fed remained committed to a difficult balancing act: keeping the economy out of recession while avoiding a resurgence of price inflation. Surprisingly, the Fed has managed to ac-

Figure 8
Short Term Interest Rates



Source: Department of the Treasury

complish this quite consistently since the October 1987 stock market crash.

The rise in the value of the U.S. dollar since the end of 1988 complicated matters for the Fed. As the dollar climbed past the psychologically important benchmarks of 2 German marks and 140 Japanese yen earlier this year, Federal Reserve governors threatened to split over the issue of easing credit.

But in June, amid increasing evidence that the economy is slowing down, major banks lowered the prime rate by half a point to 11 percent, following sharp declines in money-market interest rates. This reduction was the first since February 2, 1983.

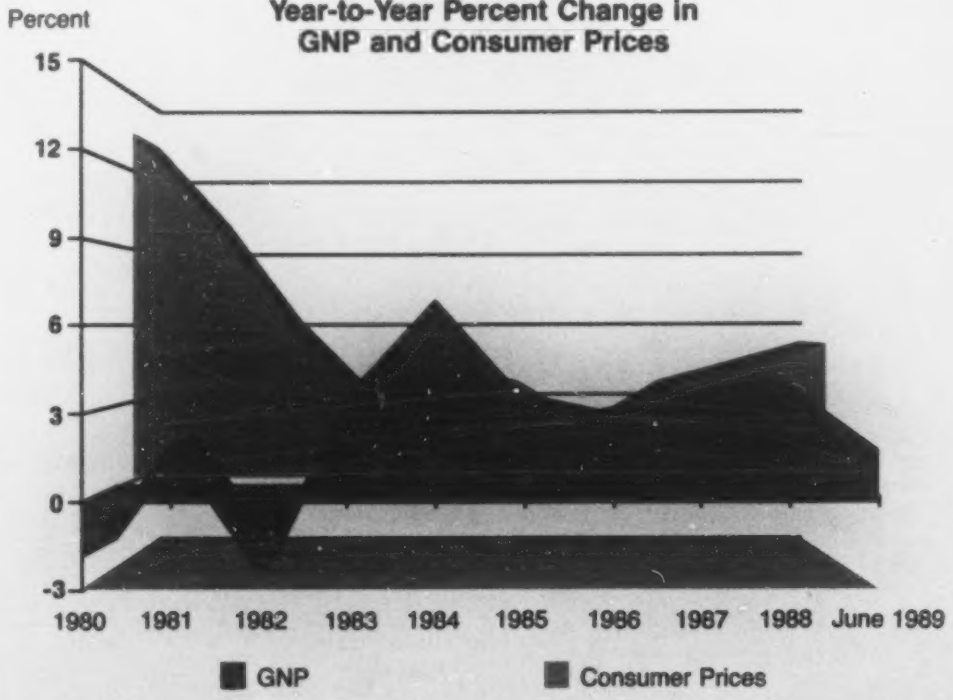
Interest rates move in unison with the rate of inflation. When inflation is going up, interest rates are quick to follow. Of course, the reverse is true: a drop in rates indicates a cooling of inflation. This has been the pattern for 1989. Earlier in the year, consumer prices were rising at an annual clip exceeding 7 percent. By mid-year, inflation had mostly subsided thanks to a slowdown in GNP growth. See Figure 9. For the year, the United States probably will experience an increase in consumer prices slightly over 5 percent, compared to 4.4 percent in 1988. Producer prices, which rose 4 percent in 1988, will increase 5 to 6 percent in 1989. See Figure 10.

Manufacturers Are Prepared For A Slowdown

The U.S. economy shows many strengths: little speculative excess, inventories that haven't swollen far out of line, increases in industrial capacity that minimize bottlenecks and gains in corporate efficiency that should help companies keep profits up even if sales slip.

Corporate profits showed a respectable gain in the first quarter of 1989, followed by a drop in the second quarter. In the quarter ending March 31, net income for 640 major corporations climbed 10 percent—the weakest performance since a 21 percent drop in the 1987 second quarter. Profit margins may come under increasing pressure later in 1989 as the pace of the economic expansion slows. Net income rose just 4 percent in the second quarter. While currently firm, the outlook for pricing is less than optimistic. Growth in industrial capacity will surpass growth in output after mid-year, thus companies will have difficulty in maintaining current prices. This is a situation already occurring for forms manufacturers.

Figure 9
Year-to-Year Percent Change in GNP and Consumer Prices



Source: Department of Commerce; Department of Labor

Manufacturing executives are much better prepared for a possible recession than some economists think. Most consider their companies far stronger than they were before the back-to-back recessions of 1980 and 1981-82. In the current expansion, manufacturers haven't become fat and sloppy. Imports and threats of takeovers have combined to keep their attention focussed on cost control.

Manufacturers have become more nimble, able to carry out a decision quickly. Companies have rid themselves of marginal products, obsolete plants, restrictive labor contracts and costly or clumsy corporate overhead structures. They're focussing on fewer businesses, generally ones in which they have a competitive advantage. Most are moving more decision-making to the division or plant level, calculating that this will produce quicker responses if business slows. Companies also farm out functions from engineering to marketing that used to be performed by big, expensive corporate staffs. Meanwhile, they are lowering the break-even point, the sales level required to make a profit. This trend is starting to surface in the forms industry as some companies move from a broad-based product line to a more specialized one.

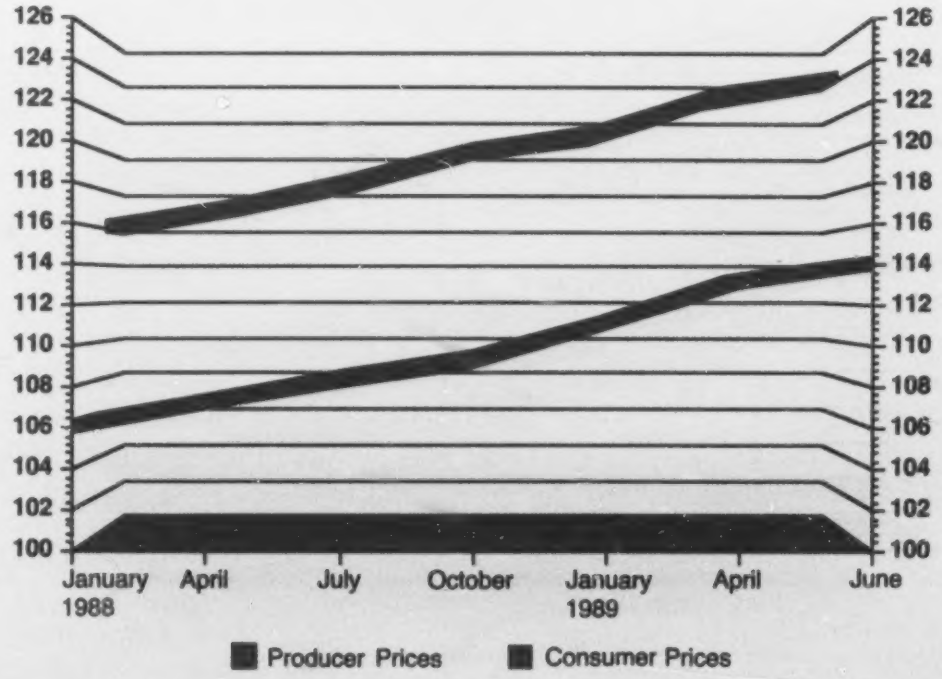
Often cited as a weakness, corporate management's focus on immediate cash flow could become a lifesaver in the event of a sharp recession. Though critics complain often and bitterly that American executives are too concerned with short term results at the expense of long term growth potential, cash flow is critical in surviving a recession.

Moreover, top management has more control over operations today than it did a decade ago thanks to advances in computerized information systems. Companies can effectively adjust purchases and production to avoid inventory buildup. The accumulation of inventory as an expansion matures followed by a drastic cutback when sales slip is the key momentum building factor in a recession.

A Soft Landing

The catch phrase for the economy these days is "soft landing," the expectation that the economy

Figure 10
Consumer and Producer Price Indices
Seasonally Adjusted*



Source: Bureau of Labor Statistics

*Index: 1982 = 100

will slow down gradually, without tumbling into a recession and hammering corporate profits. Through July 1989, all signals point to a slowdown and a soft landing for the economy in the second half of the year, followed by modest recovery in 1990.

The Federal Reserve Board's mid-year economic projection, released in July 1989, calls for real GNP growth of 2 - 2.5 percent in 1989 and 1.5 - 2.0 percent in 1990. IBFI's projection does not differ appreciably from the Fed's. See Table 2.

An external shock to the economy of sufficient magnitude could send the soft landing into a crash. A possible shock could be a run on the U.S. dollar, which would send both interest rates and inflation skyrocketing as happened in the 1970s. Such a shock would likely come from outside of the United States such as the recent political turmoil in both China and Japan.

Table 2
Percentage of Real GNP Growth

Year	Percentage of Real GNP Growth*
1989	2.1
1990	1.7
1991	2.5
1992	2.7
1993	2.3

* Over prior year

Source: IBFI

PAPER OUTLOOK

After having endured a very tight market with six separate paper price increases since January 1987, forms manufacturers may look forward to stable or even reduced prices through the end of 1989 and perhaps into 1990.

Near Term

This rosy outlook for paper supplies in the United States is being influenced in the near term by the strength of the dollar. A strong dollar means cheaper imports. Figure 11 illustrates the impact of the dollar's value on paper imports.

Total U.S. imports of uncoated freesheet quadrupled since 1982, growing from 165,000 short tons to last year's total of 600,000 short tons, which was a 44 percent increase over 1987. Most of this tonnage was coming from countries such as Canada, 252,000 short tons in 1988; Brazil, 80,000 short tons; and Mexico, 74,000 short tons. However, imports of uncoated freesheet amounted to only 9 percent of total business papers overall.

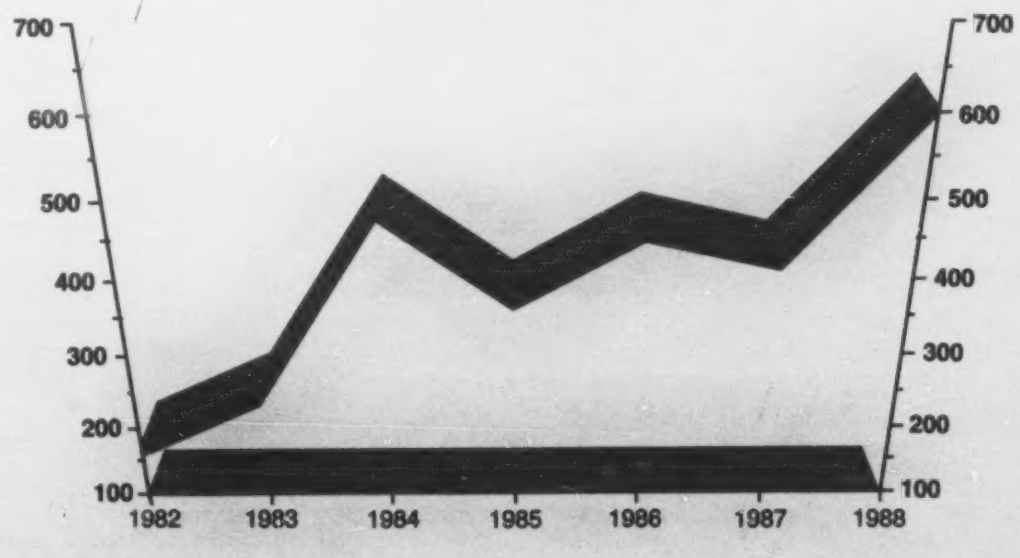
Capacity

New capacity coming on-line will be by far the greater influence on paper supplies. Last year, the Georgia-Pacific Port Hudson mill and the Weyerhaeuser Prince Albert mill, both in Canada, began operations. This year, Champion and International Paper are adding further capacity in the United States, as will Domtar and Great Lakes in Canada.

U.S. mills are scheduled to increase capacity 2.8 percent in 1989, 3.5 percent in 1990 and 3.7 percent in 1991, according to the American Paper Institute. These above average rates of capacity increments will hit at a time of slower economic advances. Therefore, operating rates of

Figure 11
Uncoated Freesheet Imports

(000 short tons)



Source: American Paper Institute

U S. mills will drop below the high current rate estimated at 94.9 percent to 93.9 percent in 1990 and 92.7 percent by 1991. See Figure 12.

Uncoated Freesheet

Uncoated freesheet consumption grew at a 5.2 percent annual rate over the 1980-1988 period. Representing aproximately twice the rate of real GNP growth, the consumption of uncoated free sheet grades should maintain a growth rate of 1.7 to 1.8 times the real GNP growth rate or an advance of 3.5 percent from 11.8 million tons to 12.3 million tons in 1989, according to Goldman, Sachs & Co. In 1990 and 1991, based on long term real GNP growth of 2.4 percent, consumption will probably increase to 4.2 percent annually. These projections are based on the expected base of installed copier machines and computer printers.

Production in the paper-paperboard industry should increase 2.0 percent to 78.32 million tons in 1989 from 76.75 million tons in 1988.

Carbonless

Key players continue to invest in the carbonless market. A moderate growth rate of 4 percent will likely keep supply and demand in check with each other. As always, utilization and therefore output can be increased in this sector by improving production and adding extra shifts if the market demands. See Figure 13.

The Pulp Market

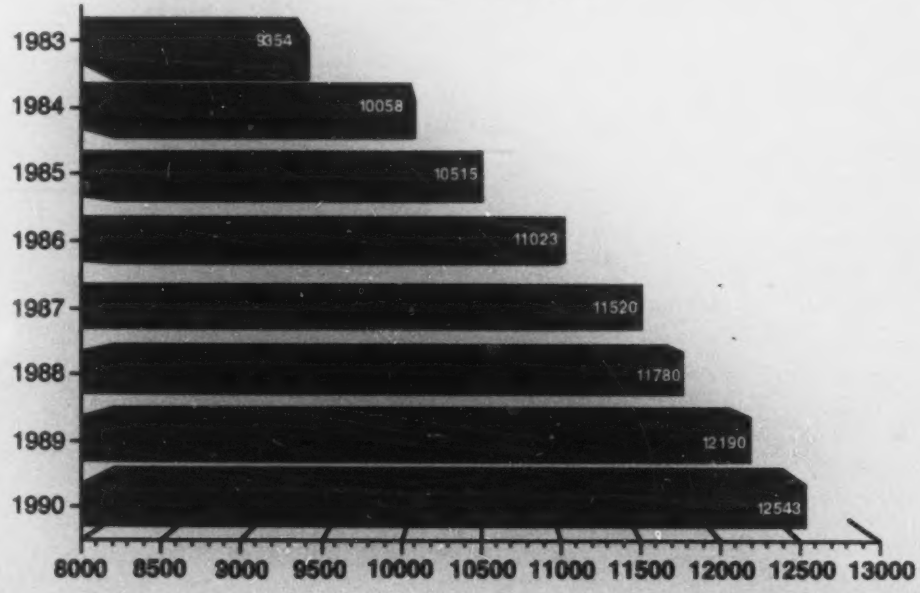
In the last few years, pulp demand has been escalating as prices have kept on climbing. However, signs that demand will peak and drop off are appearing.

Because of strong demand in end-use markets, tight capacity at pulp mills and the depreciation of the U.S. dollar, pulp prices had been climbing since 1985, but three years of ever increasing prices came to a halt in 1989 as all of these conditions reversed. See Figure 14.

- Shipments of uncoated free sheet paper were down 0.2 percent through the first six months of 1989.
- Worldwide pulp producing capacity is growing because of the addition of new pulp capacity in Canada and South America.
- The value of the U.S. dollar has risen steadily since the end of 1988, peaking in the spring of 1989.

Figure 12
Uncoated Freesheet Capacity, North America

(000 short tons)



Source: American Paper Institute

Though the marketplace accepted a price increase of approximately 4.0 percent for certain grades of pulp in the second quarter, this was definitely the last increase for 1989. In 1990, the prospects for additional price hikes are extremely low.

Paper Demand

Many different factors influence the demand for paper. For the publishing and commercial print markets, trends in media usage, communication technologies and conventional printing technologies are important. For more business oriented markets, key driving forces include advances in data processing, data output and electronic printing technologies.

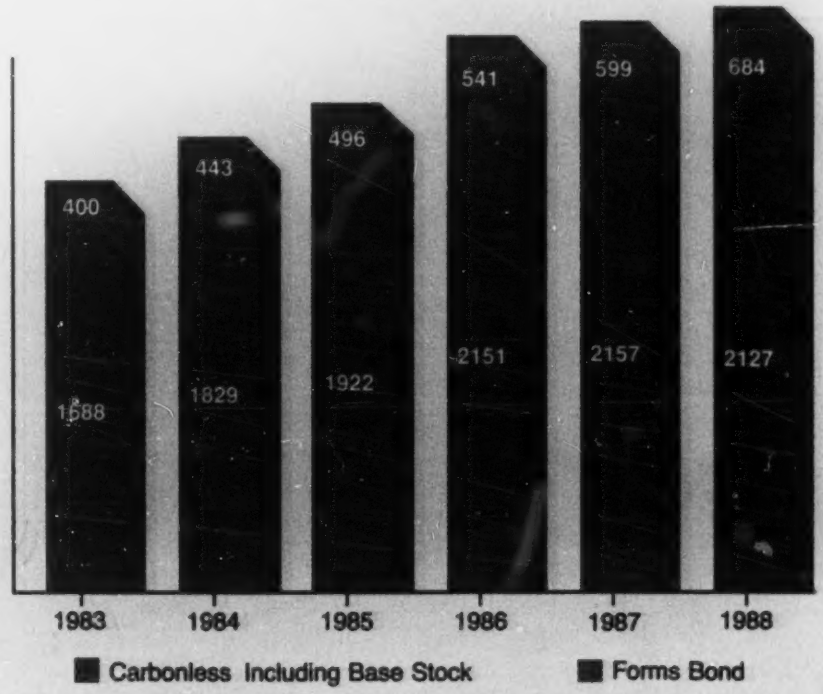
Technological developments have important implications for grades and types of paper needed in the not-too-distant future. Buyers will become more selective; quality and fitness for purpose will become much more important; and runability will become more exacting. All this means that papermakers will have added incentive to design new products.

Overall, continuing media attractiveness and the fact that most data output technologies still rely heavily on paper instill optimism about the strength of paper demand and paper-using markets, but the economy is the underlying influence on paper demand.

Resulting from advances in papermaking technology, paper manufacturers have vastly increased in flexibility. With the use of high yield pulps, new raw materials including pigments and minerals and new methods of paper formation combined with new methods of coating and paper finishing techniques, papermakers are able to produce many different products in variable order sizes. Also, the introduction of technologies such as Cycolor TM from Mead Imaging will make a tremendous impact on the short run color printing market. So in theory, paper mills will be able to meet the demands of niche market printers, producing paper qualities for specific needs. Forms manufacturers will increasingly need to seek opportunities to link the papermaking developments cited above with end-user needs. If they don't find these opportunities, others will.

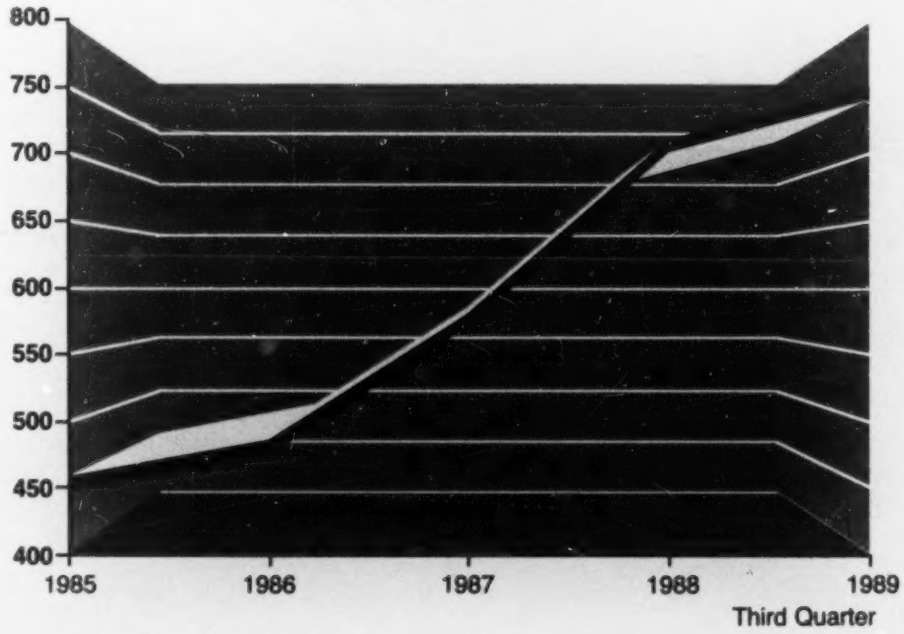
Figure 13
Total Paper Shipments

(000 short tons)



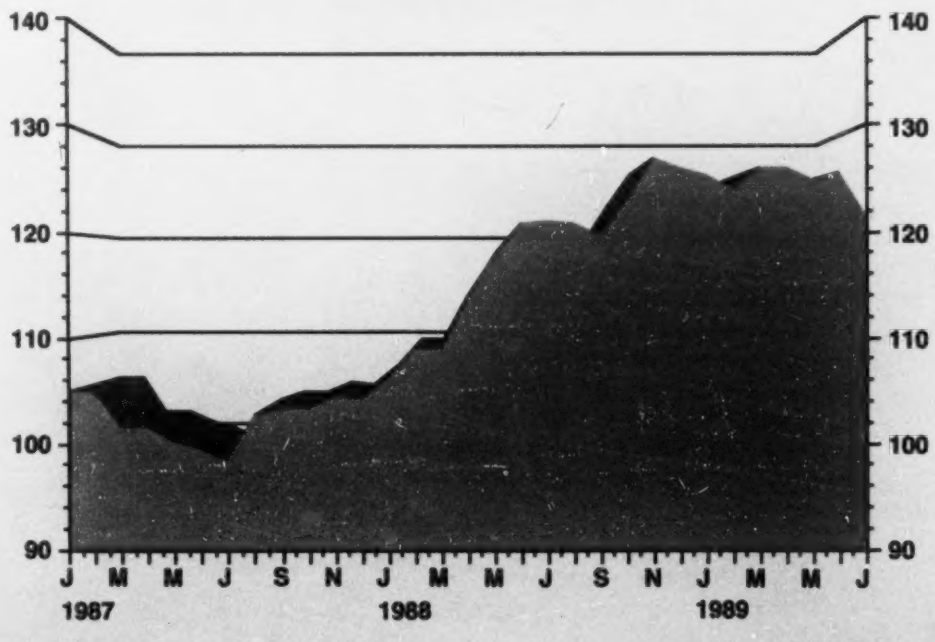
Source: American Paper Institute

Figure 14
Bleached Hardwood Kraft Prices
(Dollars Per Metric Ton)



Source: Purchasing Magazine

Figure 15
15 Pound Forms Bond Producer Price Indices



Source: Bureau of Labor Statistics

Index: 1982 = 100

PRINTER OUTLOOK

American businesses and private users bought over six million computer printers in 1988. The fastest growing segment, intelligent copier/printers (IC/Ps), will probably account for over 25 percent of all printers sold by 1992. By that time, non-impact color printers, including thermal transfer and other technologies as well as laser printers, will account for 5 - 10 percent of printer shipments.

IC/Ps made great progress in 1988 with the introduction of Hewlett-Packard's new laser printer with duplexing capabilities. This new product, in addition to the popular LaserJet and DeskJet printers, helped Hewlett-Packard maintain its leadership in the office segment of the printer market.

Printers continue to improve in performance as vendors add different fonts and enhance speed and memory. Postscript printers, assisted by price reductions and performance improvements produced by third party software suppliers, made substantial market inroads in 1988 and 1989.

At the high end, printers continue to show evolutionary price and performance improvements. However, the introduction of printer products in the 50 - 100 pages per minute speed range by printer manufacturers and office equipment manufacturers (OEMs), including Kodak, IBM, Xerox, Fujitsu, Delphax and Siemens, has proven more significant to forms manufacturers. As a group, these products are versatile with sophisticated paper handling, interface and font capabilities.

IBM's introduction of the 3827 high speed, cutsheet, light emitting diode (LED) printer in February 1988 was notable in the evolution of non-impact printers. It signaled IBM's decision to tackle Xerox head on in the high speed, cutsheet printer market. Since its introduction, the IBM 3827 has been followed by the 3825, a mid-range, cutsheet laser printer. Xerox and Siemens are planning to introduce non-impact, cutsheet printers to compete with these new IBM models. Xerox introduced the 4090, a 92 page-per-minute, cutsheet IC/P with full electronic forms capability, in 1988. For the end-user, the trend is clearly toward fast, versatile, cutsheet printers that are less expensive than the Xerox 9700.

Given these developments, IBM's plans for the 3800 will likely follow the tried and true pattern of equipment manufacturers, making the current installed base of 3800s obsolete by developing a smaller version with better pre- and post-processing capabilities. Such a machine would match well with the trend towards distributed printing by end-user.

Impact Printing

Of the U.S. installed base of approximately 37 million computer printers in 1989, nearly 83 percent are impact printers, according to Dataquest Inc. This is important news for forms manufacturers, representing a steady and durable market segment.

Although the impact printer's share of the total printer market has been dropping steadily in the 1980s, IBM injected new life into this segment in 1988. It introduced and aggressively marketed the 4248, a 60 page-per-minute impact printer that sells for about $70,000. This product has established a new generation of impact printers in the marketplace although it does not reverse the trend towards non-impact, cutsheet printers. In 1993, the United States will have an installed base of 55.6 million computer printers of which 71 percent will be impact, according to Dataquest.

And Now in Color . . .

Color is booming. Two-thirds of the personal computer monitors shipped this year and over 40 percent of the monitors in use today are color monitors; color laptops are available, too. A new software application category, desktop presentations, is based, in large part, on the ability to produce color output. Several color copiers with increased speed and print quality came on the market this past year with Kodak and Canon among the leaders.

In general, color printing is in its infancy relative to single color printing. Printer manufacturers are developing several technologies for commercial applications and have introduced early products. These technologies include color electrographic (laser) printing, dye diffusion thermal transfer, solid ink jet and Mead's Cycolor imaging technology in addition to existing impact dot matrix, thermal transfer and liquid ink jet technologies. Each technology is relatively expensive and

slow but could have a significant influence in many applications, including forms, over the next five years.

Personal laser printers in the 5 page-per-minute speed range and shared printers in the 15 - 20 page-per-minute range appear to be a major near term market. The latter products in particular will have enhanced font and graphic printing capabilities. Over the next three to five years, high speed laser printers are likely to be available with limited color capabilities.

Longer term challenges include the need for further improvements in graphics and image printing and the increased intelligence required to handle multi-tasking and networked applications for workgroups. The need for multipart forms and offset quality color printing, including logos and other images, will remain challenges for computer printer technology. However, significant strides are being made in the use of computers in forms design with interfaces to typesetters.

U.S. BUSINESS FORMS FORECAST

As we enter the 1990s, the traditional business forms industry will grow just slightly faster than the economy as a whole but will continue to experience erosion in value-added opportunities and profitability.

Closely linked to advances in computer technology, the business forms industry has attracted many new entrants into the field, ranging from quick printers and commercial printers to high technology companies producing sophisticated printers and software. Technology has also eroded many old familiar markets as forms software, laser printers and other non-impact printers become more versatile and less expensive while communication advances such as electronic data interchange (EDI) are changing the concept of routine business transactions entirely.

When demand for business forms was growing at 5-10 percent per year in the seventies and early eighties, smaller forms companies, those with revenues under $20 million, had the internal controls, management acumen and marketing expertise to make very tidy profits. As the industry matures and changes, these manufacturers must be prepared to concentrate on a specific niche or customer need to prosper in a marketplace that is projected to grow between the range of 2-3.5 percent through 1993.

While maturation, the single most important factor of the business forms industry in the 1980s, is defined as the slowing of growth, not the absence of it, the forms industry will remain a place of opportunity for companies with the requisite vision, flexibility and capital. Forms companies of all sizes are concentrating their production focus, developing a position within their market of expertise. Many are continuing the trend of entering high growth markets compatible with the forms business, such as direct mail, bar coding and pressure sensitive labels.

Large, national forms companies are entering into a new window of opportunity, offering customers complete information systems. These companies are combining information management and systems integration expertise, targeting vertical markets such as health care, banking and insurance industries, and competing against companies such as IBM, Xerox and AT&T.

Flexibility and specialization remain key to success in this turbulent environment. Companies who sell "anything to anyone anywhere at any price they can get" are signing their own Chapter 11 papers. Those who have focussed their production capabilities and concentrate on their particular market are much better equipped to stay on top of developing trends in markets and technologies.

Table 3 lists the projected average real growth through 1993 of each major business forms product line. While expecting a slowdown of economic growth but not an outright recession in the second half of 1989, IBFI forecasts the industry to exceed the growth of the U.S. economy over the forecast period.

Table 3
U.S. Business Forms Sales
Year-to-Year Percent Change

	1988-89	1989-90	1990-91	1991-92	1992-93
Custom Continuous	2.9	2.3	2.5	2.8	2.2
Stock Continuous	3.8	3.3	3.9	4.6	3.1
Unit Sets	1.6	1.0	1.2	1.7	1.3
Salesbooks & Pegboard	7.8	6.5	3.3	7.3	4.9
Total	3.1	2.5	2.7	3.2	2.4

Source: IBFI

SPECIAL REPORT
Technology and Tomorrow's Forms

The forms industry has undergone tremendous change, starting with the introduction of mainframe digital computers and continuous forms in the 1950s to the personal computer revolution of today. With the steady advances in semiconductor technology and with new technologies such as compact disks nearing widespread application, imagining where information processing will be in 10 or 20 years is difficult.

How will these sweeping changes affect the forms industry? Business forms, as forms manufacturers are sometimes painfully reminded, are not an end in themselves. Forms provide a mundane, but very critical function; they facilitate business communication and recordkeeping. As that function changes, so will the nature and use of forms.

Information systems, in broad terms, consist of computer hardware, software, people, data and procedures directed at creating information to support business operations, meet government requirements and improve management decision-making. Business forms help systematize the collection and display of the data. The value of the system is in the resulting information, not in any of the components which created it.

Every information system also has costs associated with it, including costs associated with the business forms used in these systems: first, the cost of the forms themselves, including design, production and inventory costs; second, the cost of completing the forms, which may include labor costs and computer resources; third, the cost of processing the forms, whether manually or electronically; finally, the cost of storing forms to provide an audit trail, if one is needed, or destroying them.

From a systems viewpoint, the primary consideration is what forms will best satisfy the cost and timeliness objectives of the underlying information system.

Technology

Significant developments are taking place in hardware, peripherals, software and connectivity to other computers which will affect the forms industry directly and indirectly over the next several years. The developments are especially fast-paced in the personal computer segment of the market. This technology overview looks at many of the more important developments and the implications they have for forms manufacturers.

Computer Hardware

Computers in all price and performance ranges are benefiting from the advances in semiconductor technology being achieved by Intel, Motorola and other chip manufacturers. Mainframe computers, dominated by IBM, and minicomputers, where Digital Equipment is the leader, are becoming smaller as they become more powerful. Workstation computers are beginnning to perform some applications that used to require a minicomputer.

Personal computers are moving from fairly straightforward, standalone applications to more sophisticated applications, requiring greater speed, specialized add-in boards or peripherals and multitasking and networking capabilities. Faster microprocessors and faster memory chips are making these additional capabilities possible, but the industry disagrees on "bus" specifications, which determine how data should be moved inside the computer. While the IBM PC and compatible computers dominate the personal computer segment, the Apple Macintosh is strong in certain market niches and is gaining strength in the corporate market.

Faster Microprocessors

The original IBM PC, introduced in 1982, used the Intel 8088 microprocessor. The 8088 is an 8-bit processor, meaning it handles data in chunks of eight bits each, operating at a speed of 4.77 megahertzs (Mhz). The 80286 microprocessor, used in the IBM AT computer, is more powerful and the 80386 microprocessor, introduced in 1986, still more powerful. The 80386 chip will process data internally 32 bits at a time at a speed of 33 MHz.

Intel processor technology is delivering a two-fold increase in performance approximately every three years. The 80486 processor is currently in beta site testing with the first desktop systems expected later in 1989.

The newer microprocessors also are able to ad-

dress larger amounts of memory (RAM). The DOS operating system, designed by Microsoft Corporation for the original IBM PC, can only address 640K bytes of RAM without special programming and expansion boards. Microsoft's new operating system, OS/2, in its full implementation will require at least 2 megabytes (Mb) of RAM and a microprocessor with the ability to use that memory. Apple's Macintosh II already comes with 2 Mb of memory.

Being able to address larger amounts of memory increases processing speed. Equally significant, computers can run more sophisticated, graphic intensive software applications. Today, most personal computer users do not need this raw power, even if they are willing to pay for it.

An increasing number of users will need this power as more and more link into local area networks (LANs), which require additional RAM for network management. Other groups of users will appreciate additional speed: those needing to recalculate large spreadsheets or make database inquiries; those needing to run RAM-resident applications concurrently; and those users running graphic intensive software, including some forms processing software. More robust systems are available now to meet these needs, but at higher per user costs.

Workstations

While the personal computer was revolutionizing the front office in the early 1980s, the technical workstation was revolutionizing engineering and science departments. Prior to this, engineers typically used dumb terminals linked to departmental minicomputers. Workstations provide local processing capabilities without sacrificing the power of the minicomputer. Workstations have filled the gap between PCs and minicomputers, with system prices ranging from just over $10,000 to about $100,000.

Most of the workstation development effort came out of the minicomputer industry. Because of users' heavy number-crunching needs for applications like computer-aided design and manufacturing (CAD/CAM), computer-aided software engineering (CASE), technical computation and electronic publishing, workstations have used the fastest 32-bit microprocessors available.

Workstations are superior to personal computers in other respects also. They generally use the UNIX operating system, which allows multiple processing and communication activities to be conducted simultaneously. Because the applications for which they are used are graphic intensive, they have large, high resolution color monitors. They generally have several hundred megabytes of disk storage and a built-in adaptor to connect to LANs as well as the capability to communicate with a variety of computers.

High-end personal computers have some of these capabilities. However, the combination of these capabilities makes workstation computers a potential factor in the forms market. Workstations can create sophisticated graphics, utilize huge font sets, access large databases, perform color separations and accomplish many other complex tasks.

Bus Wars

IBM's April 1987 Personal System/2 (PS/2) announcement included four new specifications: enhanced graphics capability, 3½ inch disk drives, the OS/2 operating system and Micro Channel Architecture (MCA). Users and other vendors generally have accepted the first three specifications, but MCA has been the subject of intense debate.

According to IBM, the MCA bus is essential to handle the larger volume of internal data which tomorrow's personal computers and user applications will require. These benefits, of course, are hard to demonstrate today. MCA certainly will cause an abrupt transition for today's PC users; the entire installed base of PC-compatible computers and add-in boards are incompatible with PS/2 computers.

Dataquest estimates that 36 million personal computers were installed worldwide at the end of 1988 with about 20 million of these in the United States. At least 85 percent of these personal computers plus a comparable share of the 12 to 15 million which will be shipped in 1989 are compatible with Industry Standard Architecture (ISA), the open architecture used in the original IBM PC.

MCA is a propriety bus, not an open standard. Any company wishing to provide MCA-compatible computers has to pay IBM a license fee.

Rather than endorse MCA, a group of nine leading PC-compatible manufacturers led by Compaq Computer announced a joint effort to develop products based on an open standard, Extended Industry Standard Architecture (EISA). The EISA standard is upwardly compatible with the existing base of ISA computers but provides up to 50 percent faster maximum throughput and the capability to address memory beyond 16 megabytes. Seventy computer and board vendors currently support EISA. The chip sets will be available to any company. The group's schedule calls for commercial products to be available late in 1989.

If the EISA group provides the performance promised, they will have a powerful argument to use against MCA. IBM, in fact, has backed down

from its initial stance and is offering a non-MCA PS/2. On the other hand, over 700 peripheral cards for MCA PS/2s have been announced and a number of EISA supporters also are developing MCA products. Reports that the maximum throughput capacity of the EISA bus will be well below that of the MCA bus could be significant in workgroup applications.

The jury will be out for a while on this critical matter and the direction of software development will be unsettled until the success or failure of MCA is determined.

Macintosh

Apple first introduced the Macintosh in January 1984. Its impact in the corporate market was barely noticeable. Since mid-1985, when Aldus Corporation introduced PageMaker, the desktop publishing software package, the Macintosh's graphics capabilities have established Apple's position in the desktop publishing and graphic arts markets and has enabled Apple to make inroads in the corporate market.

In addition to providing a compelling application, the Macintosh provided other innovative features, in particular an easy-to-use, icon-based graphical user interface and a Postscript laser printer. The Macintosh II, introduced more recently, offers a color monitor, eliminating a major objection to the Mac. Some of the leading edge technology in the Mac is now being emulated by PC software developers. The Mac has been quite successful. According to Creative Strategies, 2.2 million Macs were installed at the end of 1988.

During this time Apple built an impressive group of third party developers for the Macintosh. Many of the major Mac developers, such as Aldus and Adobe, eventually developed products for the PC-compatible market. Conversely, many PC developers have introduced products for the Mac and most major software developers now develop for both systems.

The Mac's graphics capabilities position it as a serious competitor in the desktop publishing, presentations, engineering and desktop forms processing markets. Forms applications could be standalone forms design applications or they could be networked distributed forms management solutions. Apple probably has the potential to get 20 to 30 percent of the personal computer forms markets, twice its overall market penetration.

The Apple II computer was successful in the early 1980s largely because of its open architecture. Ironically, the Mac architecture is closed. Apple spun off its software operations, now Claris Corporation, to keep its software developers happy, but has maintained strict control over the hardware. There are no Mac "clones."

Developments in Peripherals

Computer peripherals provide ways for users to increase system functionality and meet specific application needs. Three peripheral products in particular will influence the business forms market: optical storage devices, document scanners and non-impact printers.

Optical Storage

Steady progress is being made in the development and implementation of optical storage technology. Compact Disk-Read Only Memory (CD-ROM) is gaining applications, Write Once, Read Many (WORM) drives are in production and progress is being made on erasable disks.

The future of optical disk storage as far as business forms are concerned lies in their phenomenal capacity. Instead of megabytes of storage, optical disks can store gigabytes, billions of bytes of data. Image databases will be a reality, with possible applications in forms management and document storage.

Document Scanners

The desktop scanner market today ranges from $250 low-resolution, hand-held scanners to the increasingly popular 16-level, gray-scale scanners to 256-level, gray-scale scanners priced over $3,000. A few desktop color scanners have been introduced, but their cost at this time relegates them to market niches such as ad agencies.

Scanners come with software which stores scanned images in a selected image format. While numerous formats are in use, the market seems to be settling on a few used by the most popular paint software programs. Since a scanned image is bit-map data, it can require a megabyte or more of disk storage, depending on how it is compressed. The increase in scanner popularity may have been caused as much by the decreasing cost of storage as by the interest in desktop publishing.

Increasing processor speeds and decreasing memory and storage costs are making the creation, manipulation and storage of image information more of an everyday occurrence in business and less of a novelty. This will make possible the use of scanned and computer-generated logos, shading, graphics and other images on computer-generated forms. This trend should accelerate over the next several years.

Another significant development in 1988 was the introduction of intelligent OCR software and add-in board products. The first software product was Caere Corporation's OmniPage, $800 for the

Mac and $2500 for the PC with add-in board, which first scans a page quickly and logically breaks it into text image zones. It then scans the page again and stores the image zones in an image format and converts the text zones into ASCII-coded data.

OCR is evolving as another desktop application rather than a dedicated peripheral device. When the scanner and recognition software are decoupled, the potential user base expands. The intelligence in this technology has potential applications in scanning and digitizing existing forms, in setting up electronic forms libraries as well as in recognizing and coding variable information provided on preprinted forms.

Software: The Next Generation

Although hardware technology is progressing rapidly, software technology is having a hard time keeping up. However, several software developments may directly or indirectly affect forms manufacturers. Some of these are related to the overall functional improvements in computer systems and some are more specifically related to forms applications.

Graphical User Interfaces

Apple Computer, with the introduction of the first Macintosh, provided products incorporating a graphical user interface, an interface with symbols or icons to lead the user through program choices. Apple further enhanced the concept with the use of a mouse rather than a keyboard to move through program menus. All Macintosh programs use a consistent interface.

Graphical user interfaces provide users with a natural, intuitive, easy way to interact with their computers. The software interface for PC-compatible computers has been limited by the DOS operating system in incorporating much beyond pull-down menus and different developers have used different interfaces. The ease of use of the Macintosh, largely because of its consistent user interface, has been a major factor in its success.

OS/2

OS/2, the next generation operating system for IBM-compatible computers, gives PC users similar capabilities to those enjoyed by Macintosh users. OS/2 is being released in stages with the full implemenation of the OS/2 Presentation Manager to be delivered this year.

IBM believes OS/2 will become the system of choice as the availability and price of memory improve. Major software suppliers, including Microsoft, Lotus and Ashton-Tate, have indicated major development efforts aimed at OS/2 Presentation Manager.

OS/2 does have drawbacks. It requires up to 4 Mb of RAM and a relatively expensive computer. It will be expensive, perhaps impractical, to upgrade the large installed base of IBM AT-compatible computers which have not been amortized. Besides multi-tasking, some argue that OS/2 offers few functional advantages over DOS.

The Software Publisher Association recently conducted a poll of its 350 members. Half of those surveyed believe OS/2 will not come into its own until 1990, while a fourth think OS/2 never will be a dominating operating system. Dataquest estimates that OS/2 shipments will overtake DOS shipments in 1992.

Four operating system "standards" may be in use between 1992 and 1994. OS/2 may dominate in large companies with PS/2 computers, while DOS maintains a strong position in small companies with AT-class and 80386-based computers. The Macintosh operating system will be used with all Macintosh computers. Finally, UNIX will be the operating system of choice for high-end machines and multi-user applications.

UNIX Operating System

AT&T, the developer and primary supplier of UNIX, and Sun Microsystems continue to develop UNIX. Most other major computer manufacturers, including IBM, Hewlett-Packard and Digital Equipment, belong to the Open Software Foundation (OSF), which they created in 1988. OSF's objective is to develop a non-proprietary operating system, one in which members will participate in developing and which will have modest or no royalty fees.

UNIX is the operating system of choice in the rapidly growing workstation market, whereas proprietary operating systems have dominated the minicomputer market. UNIX is also pushing down in the market. Versions of UNIX are available on the IBM PS/2 Model 80, the Compaq Deskpro 386/20 and the Sun 386i, all 80386 based, high end personal computers or low end workstations.

In comparison with the Macintosh operating system or even DOS, UNIX is difficult to use. However, for multi-user, multi-tasking applications, a decade of experience with UNIX and a large supply of systems software, utilities and applications software are available. Further development will improve the user interface.

Application Software

The proliferation of operating systems is placing strains on software developers to make their products available on a wide range of platforms. Software development is struggling to keep up with hardware as users begin to think about

multi-tasking and workgroup applications.

However, thousands of proven programs are available for both the Macintosh and PC-compatible computers. Upgrading these programs to take advantage of the new operating systems and hardware capabilities will be a difficult task. The software industry has been criticized for missed deadlines and "vaporware," programs promised but not delivered, and the situation is likely to get worse before it gets better.

Desktop Publishing

Desktop publishing has matured as a personal computer application. Business people as well as professional communicators such as marketers, publishers, writers and designers, use desktop publishing software. Publishing solutions are available for workstations as well as personal computers.

About 300,000 software packages were shipped in 1988. Approximately 25 to 30 percent of these programs were for Macintosh computers. In addition to page composition software, such as Aldus PageMaker or Ventura Publisher, desktop publishing draws on a variety of image-oriented software packages, including illustration and paint programs. According to Aldus, forms design is the third most important application for PageMaker.

A related development and an important one for forms manufacturers is the emergence of enhanced word processing software to fill the gap between word processing and page composition software. The latest versions of Word Perfect and Microsoft Word have the built-in capability to draw lines and boxes and do shading as well as having improved font capabilities. In other words, these enhanced word processing packages are capable of creating simple forms.

Forms Processing Software

Dedicated forms processing software is an emerging product category. These products may be positioned as standalone programs or may be intended for resellers, VARs and systems integrators to integrate with a database program in developing end-user applications.

While industry definitions are evolving, the potential market is substantial. Dataquest, for example, estimates that 237,000 software programs for managing forms were sold in 1988, with an expected growth rate of over 50 percent per year.

Three groups' needs must be considered in designing forms software: professional forms designers; departmental forms developers and users; and information systems professionals who have to manage the data collected. If the needs of these three groups can be satisfied, companies can achieve significant savings on traditional forms. Additional savings in inventory costs are possible through on-demand printing.

Forms software is a new product category, but the fully featured products to date have two distinct modules: a design module and a form fill-in module. The designer uses the graphics features of the software to design the form, which then can be printed locally, serve as a master for offset printing or sent to a typesetter. For some applications, the form can remain in electronic form and be used for direct data entry. Data captured in this way can be transferred to other computers via network or diskette for further processing.

Software developers consider forms processors a difficult product to make. They require elements of several types of software programs: database, spreadsheet, word processing and graphics.

The best products allow users to automate existing processes rather than forcing change. However, the two worlds are converging; forms increasingly mimic the computer screen and vice versa. Forms software companies still have to deal with nagging problems such as MICR printing, color, multipart forms and electronic signatures.

Xerox recently introduced a product, FormBase, which could become a major factor. FormBase is a Windows-based product that transparently integrates a forms drawing package and a relational database. The user graphically creates the form and FormBase automatically sets up the database. Other recent introductions have been by Delrina Technology, Claris and niche suppliers such as Softview.

Advances in Connectivity: Local Area Networks

According to Computer Intelligence's surveys, about half of the Fortune 1000 and the corresponding Federal Government agency sites have LANs installed today. Most of these link PC-compatible computers and some large Macintosh networks. For example, Arthur Young & Co., the Big Eight accounting firm, has more than 5,000 Macs, all AppleTalk-networked, with about 500 AppleWriter laser printers. Many companies, large and small, have Macs and PC-compatibles networked together.

The distribution channels are maturing in their ability to sell and support network applications. *Varbusiness* states that almost half of all VARs, VADs, systems integrators plus almost two thirds of all storefront retailers already sell networks. Businessland, one of the largest resellers, has more than 100 systems engineers and has in-

stalled more than 100,000 LAN nodes. Market coverage is expected to increase in 1989 as more VARs move away from unprofitable hardware sales to technologically sophisticated, value-added market niches.

Early networks first allowed users to share control of computer hardware then peripherals such as printers and then data files. Now we are seeing the emergence of hardware and software products to improve communication and productivity in workgroups. The primary reasons for purchasing personal computer LANs today are to share data files, share storage, share printers and communicate via electronic mail. Internal messaging and electronic mail systems have been taken for granted by people using minicomputer and mainframe terminals, but are essentially nonexistent on unnetworked personal computers.

The capabilities of LANs are important, but they do not come without a cost, in this case from $300 to $1,000 or more per node. Since most network software takes 74K to 188K bytes of memory, many existing single user computers and programs cannot be networked without being upgraded. In addition, new systems and procedures have to be established to deal with issues such as security and database management.

Four major personal computer LAN vendors are Novell, 3Com, IBM and Banyan. Sun Microsystems, whose TOPS network links Macs, PCs and Sun workstations, is a major player in the workstation segment. The vendors which will be successful in the long run are those which can deal with the distribution and support issues.

In addition to connecting personal computers and workstations with a LAN, LANs can be connected to host computers and other LANs via gateways. The ultimate objective of many companies is a corporate-wide network with a smooth, transparent flow of information throughout the network. In most companies, that is a long way off.

Electronic Data Interchange

Electronic data interchange (EDI) is the electronic exchange of business data and transactions between two entities with the intention of speeding the flow and accuracy of information. EDI is usually implemented between different levels of an industry, such as between a company and its suppliers or between a company and its dealers. EDI poses an obvious threat to the use of preprinted business forms.

Paper-based systems have many delays in order entry, billing and receiving payments. Keying operations are inefficient and prone to error. Huge volumes of paper are created and must be handled. The electronic exchange of purchase orders, packing slips and invoices offers significant opportunities to reduce the clerical effort associated with the preparation, data entry and processing of the huge volumes of these documents a large company can generate.

EDI can provide several important benefits to companies:

- reduce transaction-related personnel, paper and mailing costs;
- reduce inventory levels;
- improve cash flow;
- improve ability to forecast and plan; and
- improve timeliness and accuracy of information.

EDI has been most successful in highly competitive or low margin industries such as the automotive industry, retailing, grocery products and the transportation industry.

Industry committees have been formed to coordinate and promote the development of EDI in particular industries. For example, the Voluntary Interindustry Communications Standards (VICS) committee has defined standard transaction formats to facilitate the implementation of EDI in the retail industry.

Business documents, such as invoices and purchase orders, are sent between companies in a variety of public and private formats and over a variety of public and private networks. For example, General Electric Information Services has the world's largest commercial teleprocessing network, providing EDI capabilities in 750 cities worldwide. GE's EDI*EXPRESS System handles over 250,000 user sessions per day, transmitting over 300 million characters per hour.

Implementing EDI requires integrating a company's business strategy, its business systems and its trading partners. Companies usually start with a single application and only one or two trading partners. Economies of scale and the return on the EDI investment improve as partners and applications are added.

A View of the Future: Information Technology in 1994

We are witnessing a dramatic increase today in the amount of computer power available to individuals and workgroups. We will likely one day think of the 1980s as the personal computer era and the 1990s as the general purpose workstation

era. By 1994 many users and not just the most advanced "power" users will be using 32-bit systems with 16 Mb RAM, 1 Gigabyte of storage and 15 inch, color, flat panel, bit-mapped monitors.

A three-tier computing model will develop in medium and large companies:

Level	Computer Processing
Company	Host/mainframe
Workgroup	Network server/workstation
Individual	PC/workstation

As the cost and complexity of computer systems increase, a corresponding requirement for increased support will arise. More managers and departments will have to be involved in the decision process. Computer operations will require more sophisticated management; LANs will require network management at the departmental level as well as the corporate level.

Other management issues will include end-user training, application integration, technical support, administration of widespread systems and security. Regarding the latter, for example, computer viruses are more likely when computers are networked and can cause more damage.

In 1994, many issues regarding standards will remain unresolved. Manufacturers and resellers will have more strategic alliances in place. As manufacturers and resellers attempt to deal with low hardware margins and the need for increased support, the industry will consolidate.

In the long run, the trends underway today should lead to less complicated, more productive systems from the users' perspective. However, in the short run, computer systems first may well become less standardized and more complicated to install and use.

Strategic Implications for Forms Manufacturers

To the forms manufacturer, this means the tremendous increase in computer processing power will allow a whole new generation of graphic-intensive, workgroup applications to be developed. Users will have more and easier ways to create forms electronically and print them on demand.

Forms manufacturers often distinguish between high value and low value forms. A significant portion of the threat posed by electronic forms is in low value forms. Many amateur forms designers will be creating forms for departmental needs, temporary projects and similar low volume requirements. The need for professional forms design will still be needed for high value forms.

Electronic forms as represented by EDI pose a major, long term threat to forms manufacturers. EDI is driven by the biggest, most progressive companies and dramatically affects the forms use of these companies.

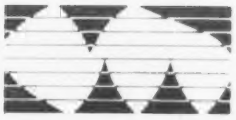
However, the same technology that enables networked, multi-user applications and EDI provides forms manufacturers with the tools to design, produce and distribute forms in new and more effective ways. Computer technology is the friend and the foe of forms manufacturers. Forms manufacturers need to make computer technology work for them by being open to potential new opportunities for information related services as well as additional forms products.

The traditional view of a forms manufacturer is one of a company producing preprinted forms for business. Changing customer needs will require increasingly sophisticated marketing approaches and a broader understanding of end-users' information requirements. Forms manufacturers must remain solution oriented but with an expanded view of the added value they can provide.

Appendix
Historical Statistics

Sales Data, Manifold Business Forms
Millions of Current Year Dollars At Shipment Values

	Unit Sets	Custom Continuous	Stock Continuous	Sales & Other Books	TOTAL
1958	159.6	150.4	18.8	45.2	374.0
1963	265.5	239.4	53.9	39.6	598.4
1967	361.7	391.9	98.0	44.2	895.8
1970	468.4	493.4	185.0	52.3	1,199.1
1971	486.4	518.9	190.0	47.0	1,242.3
1972	547.3	578.2	204.9	51.5	1,381.9
1973	630.2	733.7	282.1	59.8	1,705.8
1974	776.2	966.1	432.2	78.8	2,253.3
1975	781.6	944.9	413.7	78.3	2,218.5
1976	849.1	970.3	521.1	84.8	2,425.3
1977	958.1	981.1	633.9	129.5	2,702.6
1978	1,065.1	1,194.8	680.3	137.9	3,078.1
1979	1,248.7	1,466.9	891.4	154.2	3,761.2
1980	1,323.1	1,657.9	1,031.7	174.1	4,186.8
1981	1,417.2	1,823.7	1,186.5	175.7	4,603.1
1982	1,390.3	1,886.0	1,229.3	184.0	4,689.6
1983	1,250.0	2,020.0	1,305.0	260.0	4,835.0
1984	1,350.0	2,465.0	1,490.0	280.0	5,585.0
1985	1,415.0	2,650.0	1,530.0	295.0	5,890.0
1986	1,470.0	2,820.0	1,515.0	300.0	6,105.0
1987	1,563.0	3,098.0	1,628.0	331.0	6,620.0
1988	1,677.0	3,363.0	1,787.0	372.0	7,199.0



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